UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/663,564	09/15/2000	Gregory L. Slaughter	5181-47200	3521

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EXAMINER
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ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 October 2004</u>.

2a)☐ This action is **FINAL**.　　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 66* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 8, 10 - 14, 16 - 41, 44 - 56, and 58 - 66* is/are rejected.

7)☐ Claim(s) *9, 15, 42 - 43, and 57* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All　b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☒ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1 – 66 are presented for examination.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   **Claims 1, 5, 10, 13 – 14, 16 – 21, 24 – 26, 44 – 46, 48 – 51, 54, 58 – 63, and 65**

- 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK

patent no. 2,332,288 A in view of Wolf, US patent no. 6,668,271.

4.   Buckle reference was cited in the last office action.

5.   **As to claim 1,** Buckle teaches a method for representing a state of a process in

a data representation language in a distributed computing environment, the method

comprising the steps of:

executing the process within a first device (inherent when transporting the agent

from L1)

converting a current state process into a language representation of the current

process (record object and object states (ie an agent) as a stream of data ...... ACL

message string, page 38) wherein the computation state of the process comprises

information about the execution state of the process within the first device;

storing the language representation of the current computation process (the

agent code in the form of ACL message is stored, page 39 lines 1 - 10);

wherein the representation language representation of the current computation

state of the process is configured for use in reconstituting (re-constructing the byte

stream back into an object resident, page 38 lines 30 - page 39 lines 5) the process

and resuming execution of the process (continue execution, page 38 lines 10 - 20).

Buckle does not explicitly teach that the language is the data representation

language.

Wolf teaches the agent carrying data representation language including the

execution state of the process and reconstituting the process (agent.xml map to, col. 2

lines 1 - 10, col. 3 lines 25 - 45, col. 4 lines 25 - 35, col. 5 lines 1 - 8, and col. 6 lines 1 -

5).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Buckle and Wolf's system because

Wolf's xml would be the well-known language for streaming data in a distributed system

and is enable for interpretation between applications and organizations.

6.   **As to claim 5**, Buckle teaches

a second device (remote host, page 38 lines 10 - 20) accessing the stored data

representation language representation of the current computation state of the process

(the content is decoded and operated at remote host, page 38 lines 15 - page 39 line

10);

reconstituting (re-constructing the byte stream back into an object resident in

remote host, page 38 lines 30 - page 39 lines 5) the process at the current computation

state within the second device from the data representation language representation of

the current computation state of the process; and

resuming execution of the process within the second device from the current

computation state (continue execution at remote host, page 38 lines 10 - 20).

7.   **As to claim 10**, Buckle teaches

the first device accessing the stored data representation language representation

of the current computation state of the process from the space service (L1 transported

agent to L2 residing on a single machine, p. 15 lines 20 - 29, and page 38 lines 5 - page

39 lines 10);

reconstituting (re-constructing the byte stream back into an object resident

residing on a single machine, p. 15 lines 20 - 29, and page 38 lines 30 - page 39 lines

5) the process at the current computation state within the first device from the data

representation language representation of the current computation state of the process;

ending execution of the process within the first device (ending when message is

transferred), resuming execution of the process within the first device from the current

computation state (continue execution at L2 residing on a single machine, p. 15 lines 20

- 29 and p. 38 lines 10 - 20).

8.   **As to claim 13,** Buckle modified by Wolf teaches the steps of wherein the

current computation state of the process includes one or more objects of the process,

wherein an object is an instance of a class in a computer programming language, and

wherein said converting a current computation state of the process into a data

representation language representation of the current computation state comprises:

        converting the one or more objects (Buckle; record object and object states (ie an

agent) as a stream of data, page 38 lines 10 – 20) into data representation language

representations of the one or more objects (Wolf; agent.xml, col. 2 lines 1 - 10, col. 3

lines 25 - 45, col. 4 lines 25 - 35, col. 5 lines 1 - 8, and col. 6 lines 1 - 5);

        including the data representation language representations of the one or more

objects in the data representation language representation of the current computation

state of the process (packing up agent and its state into the content parameter of an

ACL message, page 38 lines 12 – 15);

        wherein the data representation language representations of the one or more

objects are configured for use in generating copies of the one or more objects (objects

can be recovered back into object resident in remote host, p. 39).

9.   **As to claim 14,** Buckle teaches the step of wherein the computer programming

language is the Java programming language (Java, page 2 lines 25 - 30).

10.   **As to claims 16 and 17,** Buckle teaches the step of wherein the process is

executing within a virtual machine (Java would require Java virtual machine, page 2

lines 25 - 30) executing within the first device.

11.   **As to claim 18,** Wolf teaches the step of data representation language is

extensive markup language (XML, col. 4 lines 25 – 35).

12.   **As to claim 19,** Buckle teaches a method for representing a state of a process in

a data representation language in a distributed computing environment, the method

comprising the steps of:

        executing the process within a first device (inherent when transporting the agent

from L1)

        converting a current state process into a language representation of the current

process (record object and object states (ie an agent) as a stream of data ...... ACL

message string, page 38) wherein the computation state of the process comprises

information about the execution state of the process within the first ;

        sending the language to a second device (the ACL message is transported to a

second location L2 on a remote host, page 38).

reconstituting (re-constructing the byte stream back into an object resident in

remote host, page 38 lines 30 - page 39 lines 5) the process at the current computation

state within the second device from the language representation of the current

computation state of the process; and

resuming execution of the process within the second device from the current

computation state (continue execution at remote host, page 38 lines 10 - 20).

Buckle does not explicitly teach that the language is the data representation

language.

Wolf teaches the agent carrying data representation language including the

execution state of the process and reconstituting the process (agent.xml map to col. 2

lines 1 - 10, col. 3 lines 25 - 45, col. 4 lines 25 - 35, col. 5 lines 1 - 8, and col. 6 lines 1 -

5).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Buckle and Wolf's system because

Wolf's xml would be the well-known language for streaming data in a distributed system

and is enable for interpretation between applications and organizations.

13.   **As to claims 20 and 21**, Buckle modified by Wolf teaches the steps of wherein

said sending the data representation language representation of the current

computation state of the process to a second device comprises sending the data

representation language representation in one or more messages to the second device

(send messages to remote host, page 38).

14.   **As to claims 24 and 25**, see rejection for claims 16 and 17 above.

15.   **As to claim 26**, see rejection for claim 18 above.

16.   **As to claim 44**, it is the system claim of claim 19. See rejection for claim 19.

17.   **As to claim 45**, see rejection for claim 20 above.

18.   **As to claim 46**, see rejection for claim 21 above.

19.   **As to claims 48 and 49**, see rejection for claims 24 and 25 above.

20.   **As to claim 50**, see rejection for claim 18 above.

21.   **As to claim 51**, it is the software claim of claim 1. See rejection for claim 1 above.

22.   **As to claim 54**, see rejection for claim 5.

23.   **As to claim 58**, see rejection for claim 10 above.

24.   **As to claim 59**, see rejection for claim 116 above.

25.   **As to claim 60**, see rejection for claim 18 above.

26.   **As to claim 61**, it is the software claim of claim 19. See rejection for claim 19 above.

27.   **As to claims 62 and 63**, see rejection for claims 20 and 21 above.

28.   **As to claim 65**, see rejection for claim 24 above.

29.   **As to claim 66**, see rejection for claim 18 above.

30.   **Claims 2 – 4, 6 – 8, 27 – 33, 36 – 41, 52 – 53, and 55 - 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A in view of Wolf, US patent no. 6,668,271, and further in view of Matsumoto, US patent no. 6,763,334.**

31.   **As to claim 2,** Buckle teaches the steps of wherein the data representation language representation of the current computation state of the process is stored to a space using a space service (space used to store agent code of arrived stream, page

39 lines 1 - 10) wherein the space is operable to store documents including data
representation language documents.

However, Buckle and Wolf do not explicitly teach a space service wherein the
space is operable to store documents including data representation language
documents in the distributed computing environment.

Matsumoto teaches the step of a space service (ad space, col. 6 lines 55 - 65,
col. 7 lines 5 - 10, and lines 50 - 60) operable to store and retrieve documents to the
space for processes in the distributed computing environment.

It would have been obvious to one of ordinary skill in the art at the time the
invention was made to combine the teaching of Buckle, Wolf, and Matsumoto's system
because Matsumoto's space service would provide a space for keeping data to be
accessed and retrieved in the distributed system.

32.   **As to claims 3 and 4**, Buckle modified by Matsumoto teaches the steps of
wherein said storing the data representation language representation of the current
computation state of the process comprises sending (transported, page 38 lines 15 - 20)
the data representation language representation to the space service (ad space, col. 6
lines 55 - 65, col. 7 lines 5 - 10, and lines 50 - 60) in one or more messages.

33.   **As to claims 6 and 7**, see the rejection for claim 2 above.

34.   **As to claim 8**, Matsumoto teaches the steps of

generating an advertisement (define advertisements, col. 6 lines 25 -35 and col.

7 lines 50 - 60) for the data representation language representation, wherein the

advertisement comprises information to enable access to the stored data representation

language representation (advertisement are stored within internal registry, col. 6 lines

50 - col. 7 lines 20), and wherein the second device accessing the stored data

representation language representation comprises:

the second device accessing the advertisement (access by the advertisers, col. 5

lines 10 - 20) for the stored data representation language representation;

the second device locating the stored data representation language

representation using the information in the advertisement (service provider uses

advertisement to look up for client requests, col. 6 - 7).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Buckle and Jagannathan and Graham's

system because the Graham's service advertisement provide a unique protocol to

maximize the number of clients that can utilize the services.

35.   **As to claim 27**, Buckle teaches the steps of:

a first device (host which sends agent, page 38) operable to execute the process;

a second device (remote host, page 38) comprising:

.   a space operable to store documents including data representation

language documents (space to store the ACL message at the location L2, page 39 lines

1 - 10);

.   a space service operable to store and retrieve documents to the space for processes (agent can operate at location L2, page 39 lines 1 - 10);

wherein the first device is configured to:

.   convert a current computation state of the process into a language representation of the current computation state (record object and object states (ie an agent) as a stream of data, page 38) wherein the computation state of the process comprises information about the execution state of the process within the first device;

.   send the language representation of the current computation state of the process to the space service (the ACL message is transported to and stored at second location L2, page 38 and 39);

wherein the space service is operable to store the language representation of the current computation state of the process to the space (the ACL message is stored at the location L2, page 39 lines 1 - 10), and wherein the language representation of the current computation state of the process is configured for use in reconstituting the process (re-constructing the byte stream back into an object resident, page 38 lines 30 - page 39 lines 5) and resume execution of the process (continue execution, page 38 lines 10 - 20).

Buckle does not explicitly teach that the language is the data representation language and the space is used in the distributed computing system.

Wolf teaches the agent carrying data representation language including the execution state of the process and reconstituting the process (agent.xml map to col. 2

lines 1 - 10, col. 3 lines 25 - 45, col. 4 lines 25 - 35, col. 5 lines 1 - 8, and col. 6 lines 1 - 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Buckle and Wolf's system because Wolf's xml would be the well-known language for streaming data in a distributed system and is enable for interpretation between applications and organizations.

Buckle and Wolf do not teach the step of the space service (ad space, col. 6 lines 55 - 65, col. 7 lines 5 - 10, and lines 50 - 60) operable to store and retrieve documents to the space for processes in the distributed computing environment.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Buckle, Wolf, and Matsumoto's system because Matsumoto's space service would provide a space for keeping data to be accessed and retrieved in the distributed system.

36.   **As to claims 28 and 29**, see rejection for claims 6 and 7.

37.   **As to claim 30**, Wolf teaches a third device (an distributed system with internet communication would comprise many computer devices, col. 1 lines 60 – col. 2 lines 10).

38.   **As to claim 31**, Matusomo teaches space services (ad space, col. 6 lines 55 - 65, col. 7 lines 5 - 10, and lines 50 - 60).

39.   **As to claim 32**, Wolf teaches the messages are in the data representation

language (xml, col. 2 lines 1 - 10, col. 3 lines 25 - 45, col. 4 lines 25 - 35, col. 5 lines 1 -

8, and col. 6 lines 1 - 5).

40.   **As to claim 33**, see rejection for claim 19 above. This is the reserve process

that the first device at L1 location is able to receive and re-instructing the ACL message

as being processed at location L2 as being processed at L2.

41.   **As to claims 36 - 37**, see rejection for claims 13 - 14 above respectively.

42.   **As to claims 38 and 39**, see claims 16 and 17 above.

43.   **As to claim 40**, see rejection for claim 18 above.

44.   **As to claim 41**, it is the system claims of claims 1 and 8. See rejection for claims

1 and 8 above.

45.   **As to claims 52 and 53**, see rejection for claims 2 and 3 above.

46.   **As to claim 55**, see rejection for claim 6 above.

47.   **As to claim 56**, see rejection for claim 8 above.

48.   **Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A in view of Wolf, US patent no. 6,668,271, and further in view of Jagannathan, US patent no. 6,496,871.**

49.   Jagannathan was cited in the last office action.

50.   **As to claim 11,** Buckle and Wolf do not explicitly teach the steps of wherein the current computation state of the process includes one or more threads of the process.

Jagannathan teaches the steps of one or more threads (Jagannathan; threads, col. 11 lines 7 – 20 and col. 12 lines 28 – 35) in the data representation language representation of the current computation state, wherein the information describing the one or more threads is configured for use in restarting the one or more threads (it is obvious that the threads restart when the process resume execution) when resuming execution of the process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Buckle, Wolf, and Jagannathan's system because Jagannathan's threads would be necessary to run the agent process.

51.   **Claims 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A in view of Wolf, US patent no. 6,668,271, and further in view of Matsumoto, US patent no. 6,763,334, and further in view of Jagannathan, US patent no. 6,496,871.**

52.   **As to claim 34**, see rejection for claim 11 above.

53.   **Claims 12, 22 – 23, 35, 47, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A in view of Wolf, US patent no. 6,668,271, and further in view of Edward "Core Jini" pages 405 – 410.**

54.   Edward was cited in the last office action.

55.   **As to claim 12,** Buckle and Wolf do not teach the steps of wherein the current computation state of the process includes one or more leases to services held the process, and wherein the converting a current computation state of the process into a data representation language representation of the current computation state comprises:

including information describing the one or more leases in the data representation language representation of the current computation state, wherein the information

describing the one or more leases is configured for use in reestablishing the one or

more leases to services for the process when resuming execution of the process.

Edward teaches including information describing the one or more leases (leases,

pages 405 – 410), wherein the information describing the one or more leases is

configured for use in reestablishing the one or more leases to services (renewing a

lease) for the process when resuming execution of the process.

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Buckle, Wolf, and Edward's system

because Edward's lease is the data necessary to know how long the data available for

accessing the resources.

56.   **As to claims 22 and 23**, see claim 12 above.

57.   **As to claim 35**, see rejection for claim 12 above.

58.   **As to claim 47**, see rejection for claim 12 above.

59.   **As to claim 64**, see rejection for claims 12 and 13 above.

Allowable Subject Matter

60.   Claims 9, 15, 42, 43, and 57 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Response to Arguments

61.   Applicant's arguments, filed on 09/15/04, have been considered but are moot in

view of the new ground(s) of rejection.

Conclusion

62.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Phuong N. Hoang whose telephone number is

(571)272-3763. The examiner can normally be reached on Monday - Friday 9:00 am to

5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (571)272-3756. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ph
October 29, 2004

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